

## REMARKS

This Amendment responds to the Office Action mailed on February 9, 2006 and is being enclosed with a Request for Continued Examination submitted concurrently herewith. This Amendment represents a submission fully responsive to the February 9, 2006 final Office Action, as required under 37 CFR § 1.114.

Claims 1-5, 7-15, and 42-45 are pending, claims 1, 8-13, 43, and 45 have been amended, claim 7 has been cancelled, and claims 46-52 are new. In view of the foregoing amendments, as well as the following remarks, Applicants respectfully submit that this application is in complete condition for allowance and request reconsideration of the application in this regard.

### Rejections of Claims Under 35 U.S.C. §§ 102, 103

Claims 1-5, 8-15 and 42-45 stand rejected under 35 U.S.C. §102(e) as anticipated by Appenzeller et al. (U.S. Pub. No. 2005/0056826), hereinafter *Appenzeller*. Claim 7 stands rejected under 35 U.S.C. § 103(a) over *Appenzeller* in view of Dubin et al. (U.S. Pub. No. 2005/0167755), hereinafter *Dubin*. Claims 1 and 42 are the only independent claims. Applicants respectfully traverse this rejection for the reasons set forth below.

Applicants have amended claim 1 to include subject matter formerly found in claim 7, now cancelled. Application Serial No. 10/767,039 and U.S. Pub. No. 2005/0056826 were, at the time the invention of Application Serial No. 10/767,039 was made, owned by IBM Corporation. The executed assignment document for U.S. Pub. No. 2005/0056826 is recorded at Reel 013325, Frame 0188 and the executed assignment document for Application Serial No. 10/767,039 is recorded at Reel 014948, Frame 0491. Consequently, *Appenzeller* is disqualified from being used in a rejection under 35 U.S.C. §103(a) against the claims of Application Serial No. 10/767,039 by virtue of 35 U.S.C. §103(c). Applicants therefore request that the rejection of claim 1 be withdrawn.

Because claims 2-5 and 8-15 depend from independent claim 1, Applicants submit these claims are also patentable for at least the same reasons discussed above.

Claim 42 sets forth “a gate dielectric disposed on said sidewall of said gate electrode between said semiconducting nanotube and said gate electrode.” In contrast, the gate dielectric in *Appenzeller* is not disposed on a sidewall of the gate electrode (512). Instead, *Appenzeller* discloses

that the gate dielectric is applied to the nanotubes (508). Specifically, paragraph [0040] of *Appenzeller* discloses that “a gate dielectric, e.g., 511 can be formed around the nanotubes, e.g., 508, over the metal catalyst 501 and under the sacrificial layer 510.” The formation of the gate dielectric 511 is depicted in FIG. 5j of *Appenzeller*. Paragraph [0040] of *Appenzeller* also discloses that “the gate dielectric can be deposited between the nanotubes” if the nanotubes (508) form a two dimensional array. However, *Appenzeller* fails to disclose that the gate dielectric (511) is deposited on a sidewall of the gate electrode (512). As is apparent from FIG. 5l of *Appenzeller*, a gap or space is present between the sidewall of the gate electrode (512) and the nearest portion of the gate dielectric (511).

In order for a reference to anticipate the invention in a claim, the reference must teach each and every element in the precise arrangement set forth in the claim. If the reference fails to teach even one of the claimed elements, the reference does not and cannot anticipate the claimed invention. Because *Appenzeller* fails to disclose a gate dielectric deposited on a sidewall of a gate electrode, *Appenzeller* fails to anticipate claim 42. Consequently, Applicants request that the rejection be withdrawn.

Because claims 43-45 depend from independent claim 42, Applicants submit these claims are also patentable for at least the same reasons discussed above.

Should the Examiner attempt to reject Applicants' independent claim 42 in any subsequent Office Action under 35 U.S.C. § 103(a) using *Appenzeller* as a reference, Applicants note that *Appenzeller* has been properly disqualified from being used in any such rejection against the claims of Application Serial No. 10/767,039 by virtue of 35 U.S.C. § 103(c).

### **New Claims**

Claims 46-52 are new. Claim 46, which depends from independent claim 42, is patentable for at least the same reasons as claim 42.

New independent claim 47, which was constructed by adding subject matter to independent claim 42, sets forth “said semiconducting nanotube having a length such that said second end of said semiconducting nanotube projects beyond said gate electrode and into said drain.” On page 5 of the February 9, 2006 Office Action, the Examiner admits that *Appenzeller* fails to “disclose

that the nanotube 508 has a vertical dimension greater than or equal to a vertical height of the gate electrode 512.” Consequently, *Appenzeller* fails to anticipate new independent claim 47. Should the Examiner attempt to reject new independent claim 47 in any subsequent Office Action under 35 U.S.C. § 103(a) using *Appenzeller* as a reference, Applicants have properly disqualified *Appenzeller* from being used in any such rejection under 35 U.S.C. § 103(a) against the claims of Application Serial No. 10/767,039 by virtue of 35 U.S.C. §103(c). Accordingly, Applicants submit that independent claim 47 is patentable.

**U.S. Patent Application Publication No. 2003/0178617**

Applicants’ undersigned representative notes that U.S. Pub. No. 2005/0056826 (i.e., *Appenzeller*) is a divisional application of Application Serial No. 10/102,365, which is also subject to the executed assignment document recorded at Reel 013325, Frame 0188 and which published on September 25, 2003 as U.S. Pub. No. 2003/0178617. The publication date is less than one year before Applicants’ filing date of January 29, 2004. Applicants submit a Declaration of prior invention under 37 C.F.R. § 1.131, as an attachment herewith, that has been executed by all the inventors of the subject matter claimed. The Declaration establishes that Applicants invented the claimed subject matter before the publication date (September 25, 2003) of the U.S. Pub. No. 2003/0178617. Attached to the Declaration is a photocopy of an original Exhibit consisting of annotated drawings and text. Applicants’ showing of facts is, in character and weight, sufficient as to establish the inventors conceived a semiconductor device structure that embodies the features and advantages of the present invention, as claimed in the ‘039 application, in the United States prior to the publication date of U.S. Pub. No. 2003/0178617. Consequently, Applicants submit that U.S. Pub. No. 2003/0178617 is not a valid reference against the claims of Application Serial No. 10/767,039 under 35 U.S.C. § 102(a).

Application Serial No. 10/767,039 and U.S. Pub. No. 2003/0178617 were, at the time the invention of Application Serial No. 10/767,039 was made, commonly owned by IBM Corporation. The executed assignment document for U.S. Pub. No. 2003/0178617 is recorded at Reel 013325, Frame 0188. Therefore, U.S. Pub. No. 2003/0178617 is disqualified from being used in a

rejection under 35 U.S.C. § 103(a) against the claims of Application Serial No. 10/767,039 by virtue of 35 U.S.C. §103(e).

### **Conclusion**

Applicants have made a bona fide effort to respond to each and every requirement set forth in the Office Action. In view of the foregoing amendments and remarks, this application is submitted to be in complete condition for allowance and, accordingly, a timely notice of allowance to this effect is earnestly solicited. In the event that any issues remain outstanding, the Examiner is invited to contact the undersigned to expedite issuance of this application.

Applicants do not believe fees are dues in connection with filing this communication. If, however, any fees are necessary as a result of this communication, the Commissioner is hereby authorized to charge any under-payment or fees associated with this communication or credit any over-payment to Deposit Account No. 23-3000.

Respectfully submitted,

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Date

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Attachments